

What is claimed is:

1. A charging device that electrically charges a charged object charged while being moved in a predetermined direction comprising:

a charging member that electrically charges the charged object;

a power source that supplies electric power to the charging member in order to electrically charge the charged object;

10 a contact member arranged downstream relative to the charging member as viewed in the moving direction of the charged object and adapted to contact the charged object directly or by way of a predetermined intermediary medium;

15 an ammeter that gauges an electric current caused to flow through the contact member due to an electric charge on the charged object electrically charged by the charging member; and

a power source control section that controls the power source on the basis of the electric current gauged by the ammeter.

20 2. A device according to claim 1, wherein the power source is adapted to supply the charging member with electric power showing a voltage waveform obtained by superimposing an AC voltage on a DC voltage.

25 3. A device according to claim 2, wherein the power source control section is adapted to control the electric current of the AC component supplied to the charging member by the power source on the basis of the electric current gauged by the ammeter.

4. A device according to claim 3, wherein the power source control section is adapted to control an inter-peak voltage of the AC voltage supplied to the charging member by the power source on the basis of the electric current gauged by the ammeter.

5. A device according to claim 1, wherein the power source is a constant current source.

6. A device according to claim 1, wherein the charging member is a contact charging member being adapted to electrically charge the charged object in a state where the charging member contacts the charged object.

7. A device according to claim 1, wherein the power source supplies electric power showing a voltage waveform obtained by superimposing an AC voltage on a DC voltage to the charging member,

wherein the charged object has a characteristic that the charged voltage rises substantially linearly to a predetermined inter-peak threshold voltage as the inter-peak voltage of the AC voltage increases and remains substantially at a constant level when the inter-peak voltage of the AC voltage exceeds the predetermined inter-peak threshold voltage, and

wherein the power source control section detects the inter-peak threshold voltage on the basis of the electric current gauged by the ammeter and controls the AC voltage being superimposed on the DC voltage of the power source on the basis

of the inter-peak threshold voltage.

8. A device according to claim 7, wherein the power source control section determines the inter-peak threshold
5 voltage on the basis of at least three electric current values including a first and a second electric current values each of which acquired by sequentially superimposing on a predetermined DC voltage at least two AC voltages showing respective peak
10 voltages that are lower than the inter-peak threshold voltage and different from each other and gauging the electric current values by means of the ammeter when the AC voltages are superimposed and a third electric current value acquired by superimposing on the predetermined DC voltage at least one AC
15 voltage showing an inter-peak voltage exceeding the above inter-peak threshold voltage and gauging the electric current value by means of the ammeter.

9. A device according to claim 7, wherein when the power source control section acquires an electric current value by
20 superimposing on the predetermined DC voltage an AC voltage showing an inter-peak voltage exceeding the inter-peak threshold voltage and gauging the electric current value by means of the ammeter, the power source control section determines the inter-peak threshold voltage while gradually lowering the
25 inter-peak voltage.

10. A device according to claim 7, wherein when the power source control section acquires an electric current value by

superimposing on the predetermined DC voltage an AC voltage showing an inter-peak voltage that is lower than the inter-peak threshold voltage and gauging the electric current value by means of the ammeter, the power source control section determines the
5 inter-peak threshold voltage while gradually raising the inter-peak voltage.

11. An image forming apparatus adapted to form a fixed toner image on a recording medium by way of a process of
10 electrically charging a photosensitive body being moved in a predetermined moving direction and producing an electrostatic latent image on the photosensitive body when being exposed to light so as to carry a toner image as a result of developing the electrostatic latent image and ultimately by transferring the
15 toner image onto the recording medium and fixing the transferred image, the image forming apparatus comprising:

a charging member that electrically charges the photosensitive body;

a power source that supplies electric power to the charging
20 member in order to electrically charge the photosensitive body;

a contact member arranged downstream relative to the charging member as viewed in the moving direction of the photosensitive body and adapted to contact the photosensitive body directly or by way of a predetermined intermediary medium;

25 an ammeter that gauges an electric current caused to flow through the contact member due to the electric charge on the photosensitive body electrically charged by the charging member and moved to the position contacting the contact member without

effectuating exposure and development; and

a power source control section that controls the power source on the basis of the electric current gauged by the ammeter.

5 12. An apparatus according to claim 11, wherein the power source supplies electric power showing a voltage waveform obtained by superimposing an AC voltage on a DC voltage to the charging member.

10 13. An apparatus according to claim 12, wherein the power source control section controls the electric current of the AC component supplied to the charging member by the power source on the basis of the electric current gauged by the ammeter.

15 14. An apparatus according to claim 13, wherein the power source control section controls an inter-peak voltage of the AC voltage supplied to the charging member by the power source on the basis of the electric current gauged by the ammeter.

20 15. An apparatus according to claim 14, further comprising an environment detection unit that detects the temperature and the humidity of the surroundings of the photosensitive body,

 wherein the power source control section is adapted to
25 amend the inter-peak voltage on the basis of the temperature and the humidity detected by the environment detection unit when controlling the inter-peak voltage of the AC voltage.

16. An apparatus according to claim 11, wherein the power source is a constant current source.

17. An apparatus according to claim 11, wherein the
5 charging member is a contact charging member adapted to electrically charge the photosensitive body in a state where the charging member contacts the photosensitive body.

18. An apparatus according to claim 11, further
10 comprising a transfer member arranged at a transfer position located downstream relative to the charging member as viewed in the moving direction of the photosensitive body and adapted to contact the photosensitive body directly or by way of a
predetermined intermediary medium in order to transfer the toner
15 image formed on the photosensitive body onto a predetermined object of transfer,

wherein the transfer member operates as the contact member.

19. An apparatus according to claim 18, wherein the
20 transfer member is a transfer roll.

20. An apparatus according to claim 19, wherein the
transfer roll is provided with a blade adapted to contact the
peripheral surface of the transfer roll.

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21. An apparatus according to claim 19, wherein the transfer roll is pressed against the surface of the photosensitive body with a constant load.

22. An apparatus according to claim 11, further comprising:

5 a transfer member arranged at a transfer position located downstream relative to the charging member as viewed in the moving direction of the photosensitive body and adapted to contact the photosensitive body directly or by way of the predetermined intermediary medium in order to transfer the toner image formed on the photosensitive body onto a predetermined object of
10 transfer;

a rotary brush arranged downstream relative to the transfer position and adapted to contact the photosensitive body; and

a voltage applying section adapted to apply a collection voltage collecting the toner remaining on the photosensitive body
15 to the rotary brush and also apply an ejection voltage causing the rotary brush to eject the collected toner onto the photosensitive body at a predetermined timing,

wherein the rotary brush operates as the contact member.

20 23. An apparatus according to claim 11, further comprising:

a transfer member arranged at a transfer position located downstream relative to the charging member as viewed in the moving direction of the photosensitive body and adapted to contact the photosensitive body directly or by way of a predetermined
25 intermediary transfer body in order to transfer the toner image formed on the photosensitive body onto a predetermined object of transfer; and

a cleaning blade arranged downstream relative to the

transfer position and adapted to contact the photosensitive body in order to remove the toner remaining on the photosensitive body, wherein the cleaning blade operates as the contact member.

5 24. An apparatus according to claim 11, further comprising:

 a transfer member arranged at a transfer position located downstream relative to the charging member as viewed in the moving direction of the photosensitive body and adapted to contact the
10 photosensitive body directly or by way of a predetermined intermediary transfer body in order to transfer the toner image formed on the photosensitive body onto a predetermined object of transfer; and

 a toner charging control member arranged downstream
15 relative to the transfer position and adapted to contact the photosensitive body in order to electrically charge the toner remaining on the photosensitive body,

 wherein the toner charging control member operates as the contact member.

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25. An apparatus according to claim 11, comprising a plurality of photosensitive bodies that form respective toner images in different colors to produce a full color image.

25 26. An apparatus according to claim 11, wherein the power source is adapted to supply electric power showing a voltage waveform obtained by superimposing an AC voltage on a DC voltage to the charging member,

wherein the photosensitive body has a characteristic that the charged voltage rises substantially linearly to a predetermined inter-peak threshold voltage as the inter-peak voltage of the AC voltage increases and remains substantially
5 at a constant level when the inter-peak voltage of the AC voltage exceeds the predetermined inter-peak threshold voltage, and

wherein the power source control section detects the inter-peak threshold voltage on the basis of the electric current gauged by the ammeter and controls the AC voltage being
10 superimposed on the DC voltage of the power source on the basis of the inter-peak threshold voltage.

27. An apparatus according to claim 11, wherein the ammeter is adapted to gauge the electric current caused to flow
15 by the electric charge of the photosensitive body that is electrically charged by the charging member between an image forming process and the next image forming process out of a plurality of consecutive image forming processes.